Web-enabled Visualization and Access of Value-added Disaster Products

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Project Summary

This CDI-funded project will support enhanced search, access, and visualization of disaster-related products and images that are provided to USGS by contributors for sharing across the response community during an emergency event.

Contributed products are already hosted and delivered via the existing USGS Hazards Data Distribution System (HDDS), but the products are not easy to visualize or access.

The project will support expanded ingest capabilities for HDDS, allowing contributed images and map products to be more easily shared, discovered, visualized, and accessed by the user community.

Hazards Data Distribution System (HDDS)

The HDDS is a public USGS web portal that provides a consolidated point-of-entry and distribution system for remotely sensed imagery and other geospatial datasets related to emergency response. When disasters occur, this system provides a critical source of satellite and aerial imagery for the emergency response community.

The HDDS allows rapid selection, preview, and download of relevant pre- and post-event images. The system has supported hundreds of emergency events since its inception in 2010.

HDDS Contributors

The imagery and datasets on HDDS include imagery collected by USGS, as well as contributed datasets from many other agencies and collaborators. Contributing agencies include NASA, NOAA, FEMA, DHS, NGA, National Guard, Civil Air Patrol (CAP), state agencies, and others.

HDDS Users

The HDDS-hosted imagery is accessed by end users from all levels of government (Federal, State, local, tribal, and international) as well as many other organizations and communities engaged in emergency event support.

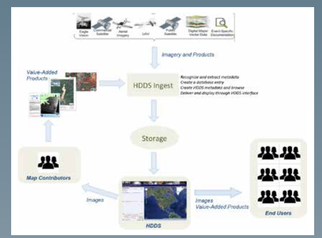
More Information

HDDS: **http://hddsexplorer.usgs.gov/**
Emergency Operations Portal: **http://eoportal.usgs.gov**

Project Overview

The project will leverage the existing HDDS ingest, storage, and delivery systems to support new capabilities for map, vector, and satellite product ingest and display.

HDDS Operational Flow



Benefits of Enhanced HDDS Ingest

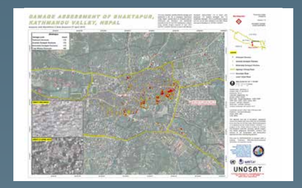
The enhanced HDDS ingest will allow user queries of contributed products based on geographic coordinates, agency source, date, and other metadata features. The ingest process will also support visual display and geographic location of the products within an interactive map-based interface.

Non-ingested Data Access:
Example screenview showing the HDDS "Ad Hoc" access area.

Ingested Data Access:
Example screenview showing the HDDS search results.

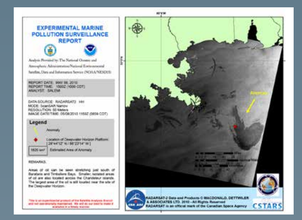
Example Products

Example 1. Image map showing landslide extent and area/volume estimates for the 2014 Grand Mesa Mudslide in Colorado. Map product was developed and provided by USGS Special Applications Science Center (SASC). Analysis based WorldView-2 imagery hosted and accessed through the USGS HDDS system.



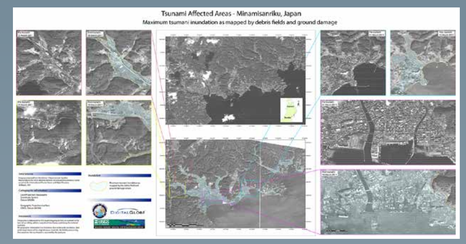
Example 2. Image map showing preliminary damage assessment for the April 2015 earthquake in Nepal. This value-added map product was developed and provided by the United Nations Institute for Training and Research (UNITAR) Operational Satellite Applications Programme (UNOSAT) and provided for hosting on the USGS/HDDS system.

Example 3. Inundation layer (KML/SHP) product, developed and contributed by USGS Special Applications Science Center (SASC) for the September 2013 flooding in Lyons, Colorado. Vectors were based on analysis of WorldView-2 (13 Sep) imagery hosted and accessed through the USGS HDDS system.



Example 4. Image map showing the May 8 oil spill extent during the DeepWater Horizon Oil Spill response in the Gulf of Mexico. This product was developed and contributed by NOAA/NESDIS, and derived from analysis of Radarsat-2 imagery hosted and accessed through the USGS HDDS system.

Example 5. Image maps showing affected areas in Minamisanriku, Japan after the 2011 tsunami in Japan. This value-added product was developed and contributed by USGS Western Remote Sensing and Visualization Center. Based on analysis of WorldView-1 imagery hosted and accessed through the USGS/HDDS system.



Example 6. Image map showing derived water extent for the 2013 Colorado flood response. Map product developed and provided by the US Air Force EagleVision. Map product and vectors based on analysis of Radarsat-2 imagery and overlaid on USDA aerial imagery hosted and accessed through the USGS HDDS system.